WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a semiconductor substrate;

a capacitor provided above the semiconductor substrate and including a bottom electrode, a top electrode, and a dielectric film provided between the top electrode and the bottom electrode;

an insulating region surrounding the capacitor and having a first hole which extends in a vertical direction and reaches the top electrode and a second hole which extends in the vertical direction and is spaced away from the capacitor; and

a first wiring connected to the top electrode and including a first conductive portion formed in the first hole and a second conductive portion formed in the second hole, the first wiring having a barrier metal film between the insulating region and the first conductive portion and having no barrier metal film between the insulating region and the second conductive portion.

2. The semiconductor device according to claim 1, wherein the first wiring includes a third conductive portion formed on the insulating region and connecting the first conductive portion and the second conductive portion.

3. The semiconductor device according to claim 1, wherein the insulating region has a third hole

extending in the vertical direction and reaching the bottom electrode, and

wherein the semiconductor device further comprises a second wiring including a third conductive portion formed in the third hole, the second wiring having a barrier metal film between the insulating region and the third conductive portion.

4. The semiconductor device according to claim 1, further comprising a transistor provided on the semiconductor substrate and electrically connected to the first wiring.

5. The semiconductor device according to claim 1, wherein the second hole has a depth greater than that of the first hole.

6. The semiconductor device according to claim 1, wherein the barrier metal film between the insulating region and the first conductive portion includes at least one of a TiN film, an NbN film, a TaN film and a TaAlN film.

7. The semiconductor device according to claim 1, wherein the first conductive portion and the second conductive portion contain aluminum.

8. The semiconductor device according to claim 1, wherein the top electrode contains at least one of Pt and Ir.

9. The semiconductor device according to claim 1, wherein the dielectric film includes a ferroelectric

film.

10. A method of manufacturing a semiconductor device comprising:

forming a capacitor above a semiconductor substrate, the capacitor being surrounded with an insulating region and including a bottom electrode, a top electrode and a dielectric film provided between the top electrode and the bottom electrode; and

forming a first wiring connected to the top electrode,

forming the first wiring including:

removing part of the insulating region to form a first hole which extends in a vertical direction and reaches the top electrode;

forming a barrier metal film in the first hole;

forming a first conductive portion in the first hole in which the barrier metal film is formed;

removing part of the insulating region to form a second hole which extends in the vertical direction and is spaced away from the capacitor; and

forming a second conductive portion in the second hole without forming a barrier metal film in the second hole.

11. The method according to claim 10, wherein forming the second conductive portion includes forming a third conductive portion on the insulating region, the third conductive portion connecting the first

conductive portion and the second conductive portion.

12. The method according to claim 10, wherein forming the first wiring includes forming a third conductive portion after the first conductive portion and the second conductive portion are formed, the third conductive portion connecting the first conductive portion and the second conductive portion.

13. The method according to claim 10, wherein forming the first conductive portion and forming the second conductive portion are performed in a same process.

14. The method according to claim 10, wherein forming the first wiring includes forming a second wiring connected to the bottom electrode.